ments consisted in using large threads which should interrupt the star trail by their own occultation of the star. This divided a continuous trail nicely, in two opposing cones of density, and was effective, but had obvious disadvantages for a transit instrument. Finally he found that by shining a light into the objective for two or three seconds, the whole plate could be fogged down without obscuring the dotted trail, which seemed only to advance in its density, while the lines behind the threads failed to be fogged, and, retaining the original density of the unexposed plate, received definite edges suitable for microscopic measures by bisection or parallelism of threads. Small threads, even the ordinary ones used in the transit reticule of observatory instruments, are amply distinct for this purpose, and this part of the process leaves nothing to be desired.

There is no doubt that in a six-inch transit instrument stars can be taken to the fourth magnitude, and wherever the elimination of personal equation is sufficiently important the utility of the method can hardly be doubted. It is believed, however, that the chief field of usefulness will be found in the physical laboratory, where any amount of artificial light can always be used, and the automatic record can be made to assume any degree of accuracy desirable. It is known that many experiments in physics are afflicted with personal equation, and thus there is a hope of avoiding them by the introduction of this apparatus.

NOTES AND NEWS.

THE Boston *Medical and Surgical Journal*, quoting an English medical publication, says that the theory has been more than once advanced that the origin of ether-drinking in Ireland can be traced to the success of Father Matthew's crusade against drunkenness in its ordinary forms. Alcoholic nature, driven out by his eloquence, returned in a new disguise, and the last state of the victims was as bad as the first. This theory has been called in question, but it receives accidental confirmation from what is at present happening in Norway. The sale of liquor is, in that country, encompassed about with more restrictions than that of the most deadly poison is with us. Temperance, in fact, is the law of the land in Norway. But these people, made sober by act of parliament, have now discovered how to get drunk without violating the law. Ether-drinking, according to a Norwegian contemporary, is becoming quite common in certain districts. The farmers buy it in considerable quantities, especially at Christmas time and on other festive occasions, and they treat each other and get drunk on ether, as they formerly did on potato or barley brandy. Ether is said to be drunk by young and old, men and women, rich and poor. If this be true, it seems to point a moral which perhaps thorough-going temperance advocates have not taken sufficiently into account. Is there, after all, a grain of truth in Byron's thesis that "man, being reasonable, must get drunk," and can the moderate use of ordinary stimulants be suppressed only at the risk of the evil spirit, which has been cast out, coming back after the house has been swept and garnished, bringing with him seven devils worse than himself?

— A correspondent of *Science-Gossip* writes to that periodical as follows: "A friend of mine keeps a quantity of fowls. They are the common kind, usually called, I think, 'barn-door fowls.' On Thursday, April 9, a number of eggs were collected. A few were given to the gardener. His wife boiled one for his breakfast on April 10, and when he cracked it a pin was found in the yolk. The yolk and white were, in places, of a blue-black color. I should feel obliged if any reader would inform me whether they have ever heard of anything being found before inside an egg, and how it got there."

— Bulletin No. 13 of the Experiment Station of the Iowa Agricultural College contains the results of a feeding experiment conducted by the farm and chemical sections. Corn fodder, corn ensilage, sorghum cane ensilage, and mangels were fed for sixty days to eight cows. The milk was sampled at every milking, and the composite samples analyzed every five days. The effect of the four different fodder rations was tabulated and results indicated from the butter fats and total solids produced by each ration, calculated from a dry matter basis. Corn fodder shows slightly better results than corn ensilage, which exceeds sorghum cane ensilage. The mangel ration is superior to any of the others. Clover hay was fed with all the rations, a double amount being given with the roots.

— A simple method of applying concrete under water has been used by the French engineer Heude in connection with the foundation work of the bridge over the River Loire, at Blois. As described in the *Railroad Gazette*, the concrete was deposited at the desired points by means of a wooden pipe composed simply of four boards and being about sixteen inches square in section. This pipe or tube was lowered vertically into the water, and was made of such length that when the lower end reached the bottom the upper end projected about five feet above the surface of the water. By means of suitable lifting tackle and scaffolding the tube could be easily raised and lowered, and moved from place to place as desired. The tube was filled with concrete, and, on being slightly raised from the bottom, the concrete could flow out and spread itself over the surrounding surface without previously coming into intimate contact with the water. By moving the tube about over any desired area, layers of concrete could thus be readily put down varying in thickness from twelve to sixteen inches. The only point to be specially observed was that the level of the concrete in the tube was always above the level of the water on the outside, thus maintaining a sufficient head of concrete to overbalance the tendency of the water to enter at the lower end of the tube. To secure this entire exclusion of water from the tube, the primary filling with concrete was accomplished after having first closed the lower end of the tube with a board; the tube having been filled this board was withdrawn. It is stated that with one such tube about eighty yards of concrete could be deposited per day, and that, in general, the results of the method were entirely satisfactory.

— The winter forcing of tomatoes is little understood by gardeners, and the literature of the subject is fragmentary and unsatisfactory. Yet it is a promising industry for all the older parts of the country, particularly in the vicinity of the larger cities, as winter tomatoes always find a ready sale at good prices. The crop is one which demands a high temperature, an abundance of sunlight, and great care in the growing, but the profits, under good management, are correspondingly high. Tomato forcing is one of the most interesting and satisfactory enterprises for the winter months. Careful experiments upon it during two winters, made at the Cornell University Experiment Station by Professor L. H. Bailey, have met with uniform success. Details of the experiments are contained in Bulletin 28 of the station named, dated June, 1891.

— The Census Bureau at Washington has issued a bulletin on the distribution of population in accordance with altitude. It appears that in the area less than five hundred feet above sea-level is included nearly all that part of the population engaged in manufacturing and in foreign commerce, and most of that engaged in the culture of cotton, rice, and sugar. Between five hundred and fifteen hundred feet above the sea are the greater part of the prairie States and the grain-producing States of the North-west. East of the ninety-eighth meridian 1,500 feet is practically the upper limit of population, all the country above that elevation being mountainous. Between 2,000 and 5,000 feet above sea-level the population is found mainly on the slope of the great western plains. Between 4,000 and 5,000 feet, and more markedly between 5,000 and 6,000 feet, the population is decidedly in excess of the grade or grades below it. This is mainly due to the fact that the densest settlement at high altitudes in the Cordilleran region is at the eastern base of the Rocky Mountains and in the valleys about Great Salt Lake, which regions lie between 4,000 and 6,000 feet. Above 6,000 feet the population is almost entirely engaged in the pursuit of mining, and the greater part of it is situated in Colorado, New Mexico, Nevada, and California. While the population is increasing numerically in all altitudes, its relative movement is decidedly toward the region of greater altitudes, and is most marked in the country lying between 1,000 and 6,000 feet above the sea. The density of population is greatest near sea-

level in that narrow strip along the seaboard which contains our great seaports. The density diminishes gradually and rather uniformly up to 2,000 feet, where the population becomes quite sparse. The average elevation of the country, excluding Alaska, is about 2,500 feet. The average elevation at which the inhabitants lived, taking cognizance of their distribution, was 687 feet in 1870; in 1830 it had increased to 739 feet, and in 1890 to 788 feet.

— The following is a brief report of the operations of the Geological Survey of Missouri during June. In the field, examinations of the clay deposits and other structural materials have been continued in Franklin County, and have been extended into Cooper, Morgan, Miller, Callaway, Gasconade, Jefferson, and Ste. Genevieve Counties. Preliminary inspection of coal beds have been made in Ray, Moniteau, Ralls, Putnam, and Grundy Counties, and lead deposits have been examined in Madison County. Detailed mapping has been prosecuted in Madison, Ste. Genevieve, Johnson, Ray, and Randolph Counties, and about 125 square miles have been covered. In the laboratory, analytical work has been done on some twenty samples of mineral waters, forty samples of coals, seven samples of limestone, and fourteen samples of clays. For the solution of problems of general stratigraphy and for the preparation of the report on the paleontology of the State, sections have been visited and collections have been made in Greene, Jasper, Newton, Lawrence, Ste. Genevieve, St. Louis, Clark, Marion, Pike, Lafayette, Saline, and Cooper Counties; and collections have been examined in Kansas City, Curryville, Sedalia, Clinton, and Springfield, Mo., and in Chester and Sparta, Ill., and in Burlington, Iowa. In the office, Bulletin No. 5 has been prepared, and is now in the hands of the printer, and much progress has been made in the preparation of the manuscript of Bulletin No. 6, which will consist of a preliminary report of the distribution of coal in the State. Mr. Frank L. Nason, late assistant geologist of the New Jersey Geological Survey, has been appointed to a similar position on the Geological Survey of Missouri, and will be in charge of the iron ores of the State. Professor Erasmus Haworth has resumed work for the summer on the crystalline rocks, and will also collect material for the preparation of a report on the mineralogy and petrography of the State. Professor C. H. Gordon has similarly resumed work for the summer in the coal fields, and most of his time will be given to the detailed study and mapping of the coal beds of Macon County. Professor J. E. Todd of Tabor, Iowa, has been engaged to take up during the summer the study of the quarternary deposits of Missouri, and to prepare a report thereon.

— The London *Journal of Education* intimates that M. Bourgeois, the French Minister of Public Instruction, is a bold bad man who has dared to run a tilt against the orthodox national spelling. In a circular addressed to rectors, he calls their attention to the waste of time that takes place in many schools in mastering the minutiæ of spelling, to meet the real or supposed exigencies of examiners. To lighten the burden of scholars and teachers, he lays down certain regulations for the future guidance of examiners. (1) Wherever authorities differ, admit all varieties — *rhythme* or *rythme*, *collège* or *collége*. (2) Where the accepted spelling is illogical, do not be severe on the logical pupil — e.g., the plurals in *x* like *genoux*, *apercevoir*, and *apparaître*. (3) Show the same indulgence with regard to the distinctions of recent grammarians — the plural of *cent* and *vingt*, the plurals of compound substantives, the agreement of *demi*. M. Bourgeois is no advocate of phonetic spelling, but he preaches a wide toleration. English spelling is far more anomalous and illogical than French. Is it too extravagant to hope that a similar instruction will be issued to inspectors from the education department, and that the reform may be spread to the civil service commissioners? There can hardly be any more demoralizing study than learning by heart the list of verbs in *-cede* and *-ceed*, and nouns in *-ence* and *-ense*. It is high time that this "fetish of orthography," to which our ploughboys and young officers are equally sacrificed, should be demolished. May we hope, too, that in time the revolution may affect the teaching of French, and that English schoolboys will not be required to know more than is demanded of natives? This, however, is a far-off divine event, and the French examiner for the joint board, or the London matriculation, will fight to the death for his *travails* and *œils*, his *mil*, *mille*, and *milles*, his *gardefu* and *gardeschasse*.

— A new botanical club has just been organized in Canada called the Botanical Club of Canada. The object of the club is to adopt means, by concerted local efforts and otherwise, to promote the exploration of the flora of every portion of British America, to publish complete lists of the same in local papers as the work goes on, and to have lists collected and carefully examined in order to arrive at a correct knowledge of the precise character of the flora and its geographical distribution. The following is a list of the officers for 1891–2: President, Professor George Lawson, Halifax; secretary and treasurer, A. H. Mackay, Halifax; secretaries for the provinces: Ontario, Professor John Macoun, Ottawa; Quebec, Professor D. P. Penhallow, Montreal; New Brunswick, George U. Hay, St. John; Nova Scotia, E. J. Lay, Esq., Amherst; Prince Edward Island, Francis Bain, Esq., North River; Newfoundland, Rev. A. C. Waghorne, New Harbour; Manitoba, Mr. Burman, Esq, Winnipeg; Alberta, W. H. Galbraith, Esq., Lethbridge; British Columbia, Dr. Newcome, Victoria.

— Professor H. Garman, entomologist and botanist of the Kentucky experiment station, reports in Bulletin 31 of that station a series of experiments in the application of Bordeaux mixture to strawberry plants for the prevention of leaf-blight, from which he draws the following conclusions: (1) Injury from strawberry leaf-blight can be largely prevented by the use of Bordeaux mixture and *eau celeste*, and to some extent by potassium sulphide and London purple. (2) Bordeaux mixture is much superior to the other preparations used. (3) Applications of Bordeaux mixture should be made as often as once in two weeks. From the complete exposure of the leaves to rain, the mixture is removed from strawberry leaves much sooner than from grape leaves or those of trees. (4) Prepared according to the following formula, it may be sprayed without the slightest injury to leaves: Bluestone, 6½ pounds; lime, 3½ pounds; water, 22 gallons. (5) Twenty-two gallons of the mixture is sufficient for spraying during one summer 337½ feet of strawberry plants, as commonly planted in rows; and will cost for materials, considering bluestone worth eight cents per pound, and lime worth one cent per pound, fifty-six cents. By buying materials in quantity, this cost can be reduced. (6) A removal of the blighted leaves in summer, without subsequent spraying, will increase instead of diminish injury from blight.

— The following notes on the home mixing of fertilizers, taken from the annual report of the Maine experiment station, are as applicable to some other states as to Maine. The mixing of fertilizers on the farm through the use of chemicals and raw materials does not seem to have been undertaken to any extent by Maine farmers, although it is clearly shown that intelligent farmers of other states, Connecticut for instance, are finding it profitable to adopt this method of obtaining commercial manures. During the year 1887 and 1888 the Connecticut experiment station examined twenty-one fertilizers mixed by farmers from chemicals purchased by themselves, and the analyses show: (1) That these home mixtures compared favorably in composition with the best factory-made fertilizers. (2) That the home mixtures had a satisfactory mechanical condition. (3) That the ingredients of the home mixtures cost the consumers on an average from 20 to 25 per cent less than if purchased in factory-made fertilizers, after allowing $3 per ton for the cost of mixing. It is not claimed that all farmers would find it profitable to mix their own fertilizers from chemicals, but it is believed that there are many farmers in the State so situated with reference to markets and transportation that they could buy and mix chemicals with profit. This could be better done, perhaps, by an association of farmers, so that by the purchase and transportation of large lots at one time, a saving could be made in prices and freights.

— A new medical sect has arisen in the West, and has already founded a college in the State of Washington, in which medicine is taught according to the biochemic doctrine, which according to

the Boston *Medical and Surgical Journal*, is thus described by one of the lecturers at a recent meeting: "The innumerable cells of the human body are supplied by twelve mineral salts in the blood, which, when their proper proportion is interfered with in any manner, cause diseases of different natures, according to which mineral salt is deficient or in excess of its natural ratio; that is, the disturbance of this ratio puts the human system into a proper condition to absorb the disease germs that are constantly floating in the air. By providing twelve specific medicines by which the proper proportion of mineral salts is restored, health is regained and disease driven out by furnishing direct to the blood the same molecules that a perfect digestion and assimilation would furnish. The doses administered supply to the tissue cells the special salt, the lack of which is the cause of all diseases. Under the advance of biochemistry it has become possible to apply to each kind of tissue its own definite and peculiar salt, according to the requirements in disease. By the distinctive systems our physicians are guided in the choice of the particular cell-salts required, the immense variety and numerous complications of morbid states offering vast scope for exact medical practice wherewith to build up the great pyramid of scientific medicine of this advanced era."

— An interesting account of the nest and eggs of the cat-bird (*Ailurœdus viridis* Latham), says *Nature*, is given by Mr. A. J. North in the latest number of the Records of the Australian Museum (vol. i., No. 6). The habitat of the cat-bird is the dense scrubs of the coastal ranges of New South Wales. Although the bird is common, authentic specimens of its nest and eggs seem to have been unknown until lately. For an opportunity of examining such specimens, Mr. North is indebted to Mr. W. J. Grimes, an enthusiastic oologist, who recently secured two nests of this species on the Tweed River. The nest is a beautiful structure, being bowl-shaped, and composed exteriorly of long twigs, entwined around the large broad leaves of *Ptarietia argyrodendron*, and other broad-leaved trees, some of the leaves measuring eleven inches in length by four inches in breadth. The leaves appear to have been picked when green, so beautifully do they fit the rounded form of the nest, one side of which is almost hidden by them. The interior of the nest is lined entirely with fine twigs. The eggs are two in number for a sitting, oval in form, being but slightly compressed at the smaller end, of a uniform creamy white very faintly tinged with green, the shell being comparatively smooth and slightly glossy. Although the cat bird is usually included in the family of bower-building birds, Mr. North has never known or heard of its constructing a bower.

— The following memorandum, by Sir George Birdwood, on the myth of the second birth of Dionysus, as connected with the development of Phœnician commerce and the country of the cinnamon tree, is taken from Louis Dyer's "Studies of the Gods in Greece," 1891: Herodotus (iii. 111) says, "Some relate that it [κιννάμωμον] comes from the country in which Dionysus was brought up;" and (iii. 97), "The Æthiopians boardering upon Egypt, . . . and who dwelt about the sacred city of Nysa, have festivals in honor of Dionysus;" and again (ii. 46) he says, "But Dionysus was no sooner born than he was sewn up in the thigh of Zeus, and carried off to Nysa, above Egypt, in Æthiopia." Now there are several Nysas. Herodotus meant Nysa in Æthiopia, that is the Troyloditic country beyond the Soudan; for the Soumali country is the cinnamon country. On the other hand, the story of Dionysus, "the Assyrian stranger," is, *inter alia*, a myth of the development of Phœnician commerce, of which wine was everywhere throughout the eastern Mediterranean (Levant) the staple; and the Greek myths, associating the wine god with Mount Meroe, in Æthiopia, probably arose from the fact that, in the original Phœnician myth, he was not a "child of the womb," but "of the thigh" (μηρός). That is to say, these myths probably arose at the time when kinship among men had ceased to be traced through their mothers, and had already begun to be traced through their fathers. Similarly, the association of the wine god with "Nysa above Egypt" was presumably due to there having been a Nysa near Meroe, and to his Greek name being Διόννσος, this Greek form of his name being probably a folk corruption of his Phœnician name, which would almost certainly end in nisi "man." Of course, the cult of the vine and the manufacture of wine did not arise in Æthiopia, but on the slopes of the Indo-Caucasus; and hence Mount Meroe [Meru] and the Indo-Caucasian Nysa have been identified as the seats of the education of the young Διόννσος.

— Edward Burgess, known the world over as a designer of fast yachts, died at his home in Boston, July 12. Mr. Burgess had been ill since May, the first trouble being typhoid-fever, but it was hoped that he was on the fair road to recovery, when an unexpected ill turn resulted in his death. To the scientific world Mr. Burgess was known as a prominent entomologist. For many years he was secretary of the Boston Society of Natural History. He was much liked by all who knew him, and his record as a yacht designer has been most honorable.

— M. Maspero has an interesting article on the dog in ancient Egypt in a recent number of *La Nature*, a brief synopsis of which we find in *Nature*. It is illustrated by representations of dogs reproduced from Egyptian monuments, and by a mummy of a dog recently opened and sketched by M. Beckmann. In ancient Egypt, as in modern Europe, the dog was regarded both as a friend and as a useful servant. He also received the honors of a god, and there are cemeteries of dogs (corresponding to the cemeteries of cats) where mummies have been found by the thousand. Attempts have been made to identify the various species of dogs represented in wall paintings, but those naturalists who have investigated the subject have not always arrived at the same conclusions. M. Maspero points out that mummies supply more trustworthy materials for study, and urges that men of science should lose no time in examining some of them, as cemeteries of animals are being very rapidly "exploited"

— A recent number of *Nature* informs us that there has been lately formed in Berlin a "Union of friends of Astronomy and Cosmical Physics," with the view of organizing practical co-operation in these subjects of research in Germany, Austria, Hungary, Switzerland, and neighboring countries, and also in the colonies, and where membership may be desired. The object is to be sought by means of free communications of the members or groups of members to headquarters, whence advice and results of observations, etc., will be issued. Sections are formed for observations (1) of the sun; (2) of the moon; (3) of the intensity and color of starlight and of the Milky Way; (4) of the zodiacal light and meteors; (5) of polar light, terrestrial magnetism, earth currents, and atmospheric electricity; and (6) of clouds, halos, and thunderstorms. Professor Lehman-Filhés has been elected president of the Union, and the presidents of the sections are Messrs. Förster, M. W. Meyer, Plassmann, Jesse, Weinstein, and Reimann.

— The work done by university extension students at Cambridge last year was so satisfactory, according to *Nature*, that the syndicate for local lectures are encouraged to repeat the experiment this year. They will be prepared to receive a larger number of students, say from sixty to eighty, most of whom will be lodged either at Selwyn College or at Newnham College. The period of study will last from July 28 to Aug. 22, or nearly a month in all. The syndicate have just issued a detailed programme of the various courses of study; and due attention has been paid to the claims of science as well as to those of literature and art. At the chemical laboratory, on alternate days, there will be a course of demonstrations illustrating the methods of chemical manipulation in a short series of typical experiments. The pupils will be first shown each experiment, and will then be expected to repeat it for themselves. At the Cavendish laboratory, on alternate days, a course of short experimental lectures, chiefly on electricity and magnetism, will be delivered; and most of the experiments shown in the lectures will afterwards be performed by the students for themselves. Geology will be studied, on alternate days, at the Woodwardian museum, where there will be a course of demonstrations on the leading fossil types of the animal kingdom, from the specimens in the museum. A course of demonstrations, followed by practical work, will be given, on alternate days, in the physiological laboratory; and Mr. Graham, chief assistant at the

observatory, will receive students and explain the uses of astronomical instruments. Arrangements will also be made for taking small parties of students to the observatory at night. Single lectures will be delivered by various eminent Cambridge men, and in this part of the work science will be represented by Professor G. H. Darwin, who will lecture on the history of the moon or some allied subject. It may be noted that the students in science will be allowed to read in the Philosophical Library.

— William Weber, the illustrious physicist, died at Göttingen on June 23.

— The biological laboratory of the Brooklyn Institute, located at Cold Spring harbor, Long Island, opened for its second season of instruction on July 1, with a full complement of teachers and scholars. Of these latter the greater number are professors and advanced scholars in the various colleges and schools of Brooklyn, New York, and vicinity. The success of the biological laboratory has been due in great measure to the efforts of Professor Franklin W. Hooper, the curator of the Brooklyn Institute, who has been heartily aided by Fish Commissioner Eugene G. Blackford and Mr. John D. Jones, as well as a large number of interested Brooklynites and residents at Cold Spring.

— At the last meeting of the Board of Trustees of the University of Pennsylvania Dr. George A. Piersol was chosen professor of anatomy, succeeding the late Professor Leidy; Dr. Harrison Allen, professor of comparative anatomy, to succeed to Dr. Leidy's chair in the biological school, and Dr. John B. Deaver, assistant professor of applied anatomy. Dr. Edward Martin was elected to the chair of special surgery. In the veterinary department Dr. S. S. J. Harger was elected professor of veterinary anatomy, and Dr. Leonard Pearson, who is now pursuing special studies at the Royal Veterinary School of Berlin, assistant professor of veterinary medicine.

— Last spring, Professor Forbes of Champaign, Ill., State entomologist, received from the Smithsonian Institution a few of the larvæ of a parasite supposed to be destructive to the Hessian fly, and said to be found only in Europe. He undertook to experiment to prove whether these larvæ are destructive to the fly here, and if so, in what degree. In order to determine this, a small patch of wheat was inclosed in a box arranged so that the grain could have light and air. A number of Hessian flies and the larvæ mentioned were put in, and the box so closed that they could not escape or other insects get in, and thus the experiment was begun. According to recent reports the larvæ have hatched and are flourishing. They are almost microscopical and seem to have been created solely to prey upon the Hessian fly. The parasite is a neatly-formed, wasp-shaped little mite, supplied with a sharp sting or auger. With unerring instinct it finds the place where the fly has laid its eggs under the husk of the straw, and, boring down into it, the parasite lays its egg inside the egg of the fly. There it develops into a grub, consuming the egg of the fly and destroying it. This is an outline of what has been proved by the experiment made. The parasite was first discovered making its depredations upon the Hessian fly in the wheat-fields of southern Russia.

— The following circular to colleges, dated June 6, 1891, has been issued by the secretary of the Illinois State Board of Health, Dr. John H. Rauch: "There is a demand from medical teachers, and young men that intend to study medicine, for a literary course preparatory to the study of medicine. This demand has been met by a few of the literary institutions in the United States, and it is hoped and believed that it will be much more generally met during the next two years. The following institutions now offer science courses for students that intend to study medicine, or that intend to teach or otherwise engage in biological work: (1) University of Wisconsin, (2) University of Pennsylvania, (3) Johns Hopkins University, (4) University of Notre Dame, (5) Yale University, (6) Cornell University, (7) Princeton University, (8) Lake Forest University, (9) Northwestern University, (10) West Virginia University, (11) University of Kansas. As must be obvious, such a course should be based on biology, and should include thorough work in this science, as well as in osteology, comparative anatomy, and chemistry, with English, French, German, some Latin, clay modelling, free-hand drawing, mineralogy, mathematics through trigonometry, physics, mechanics, logic, general and pharmaceutical botany, and (in the last year) psychology. It is of course understood that botany, being a branch of biology, should have a prominent place in the course. The catalogues of the universities mentioned contain the lists of studies offered in their science courses. Such a course should extend over four years. This will involve no loss or waste of time to the student. The Illinois State Board of Health now requires that students of medicine matriculating in the autumn of 1891, or thereafter, must study medicine four years, and must attend three courses of lectures, no two in the same twelvemonth, in order to obtain a license to practise in Illinois. This rule will apply also in some other States. The Illinois State Board will, however, recognize a thorough course in science, such as indicated above, as equivalent to two years' study and one course of lectures, thus enabling the student to enter the second class in the medical college. This makes the full time of study six years in the literary and medical schools, or two years less than is required of the student pursuing a strictly classical course. Not only will time be thus saved, but the science student will be much better prepared to enter the second course of the medical school than will the classical student to enter the first year. The Illinois State Board wishes to make up a science course that can be recommended to any college wishing to adopt such a course, and having but little time to study the subject, I desire to enlist your aid and have your advice in the matter so as to make the course as practical and as beneficial as possible. Will your faculty, therefore, make out such a course as it thinks best for the purpose, and send it to the secretary of the board? The demand from medical teachers and from students of medicine having been met by some universities, must be met by all that would continue to hold a high rank as educators of young men for the work of life."

— In a note communicated to the French Academy of Sciences, says the *International Journal of Microscopy*, M. A. Lothelier states that in *Berberis vulgaris*, *Robinia pseudacacia*, *Ulex Europæus*, and other plants, the formation of spines is dependent on the access of light. Plants grown in comparatively little light present very few spines, but those grown with free access to it have more numerous, more differentiated, and more developed spines. M. Lothelier has observed that the loss of assimilation power caused by the development of spines is usually balanced by the stronger growth of the axillary leaves.

— The skin of toads and salamanders has lately been submitted to microscopical examination by Mr. Schulz (*Intern. Journ. Micros.*), who finds that there are two kinds of glands present in the skin of these animals, viz., mucous, and poisonous. The former are present all over the body; the latter are confined to the back of the body and limbs and the ear region behind the eyes; and in the salamander are present at the angle of the jaw. The poison-glands are larger than the mucous glands in the salamander, are oval, and have a dark granular appearance, due to strongly refractive drops of poison, a good reagent for which is copper hæmatoxylin. The poison is secreted by epithelial cells lining the glands, and, when the animal is stimulated by electricity, it is exuded slowly in drops by the toad, but discharged in a fine jet, sometimes to the distance of a foot or more, by the salamander. The anæsthetic action of the poison of the toad and the use to which it is put in medicine by the Chinese have frequently been pointed out.

— K. Hartmann, in *Gesundheits Ingenieur*, relates a case in which a lead pipe was cut through by an insect that was actually found with its head in the hole pierced by it. A workman was called in to repair a defective pipe which had been injured on a previous occasion, as was reported, by a "nail hole" occurring in a soldered joint. This time the worm (a wood wasp) causing the mischief was found *in situ*. The hole on the exterior of the pipe was of a rounded form, about one-quarter of an inch long by one-eighth inch wide, and the penetration was through the entire thickness of the metal. Though of rare occurrence, says the *Scientific American*, well-authenticated instances of similar injuries by insects are on record.